Clarion

Service Manual

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"Clarion Service Manual"

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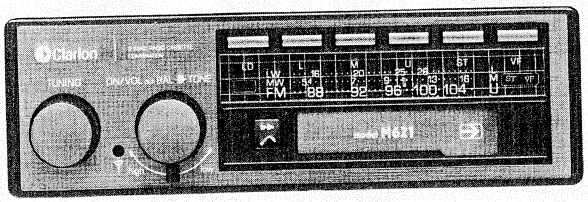
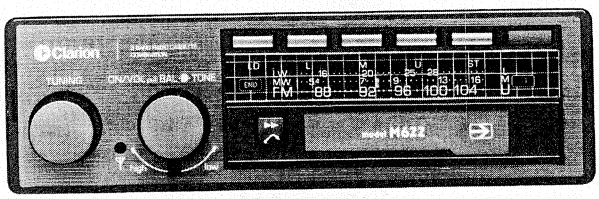
Model M621 (PE-6006A)
M622 (PE-6007A)



M621



M622

■SPECIFICATIONS:

Radio section

Circuit system: Superheterodyne
Tuning system: Manual μ-tuning
Receiving frequency: LW 155kHz to 281kHz
MW 531kHz to 1,602kHz
UKW(FM)
87.5MHz to 104MHz

Intermediate frequency:
LW, MW 460kHz
UKW(FM) 10.7MHz

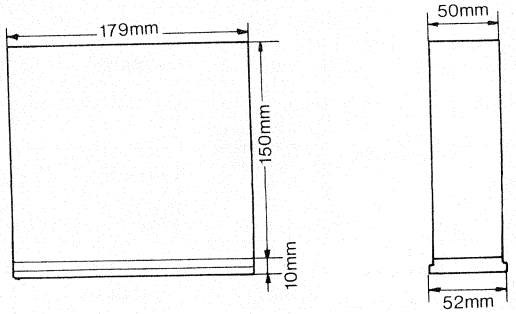
Tape section

Reproduction system: 4 track, 2 channel, 2 program stereo cassette tape playback
Tape speed: 4.76cm/sec. (1⅞ ips)

Composite

Speaker impedance: 4Ω×2
Power output: 4.5W×2
(at 10% distortion TYP.)
More than 8.0W×2
(at max. output TYP.)
Power supply voltage: DC 14.4V(10.8V to 15.6V)
Negative ground
Power consumption: Less than 3A
(at max. output)
Semiconductors: 8 ICs, 4 Transistors and
(Not included 6 Diodes (M621)
Tuner pack) 5 ICs, 2 Transistors and
9 Diodes (M622)

Dimensions:



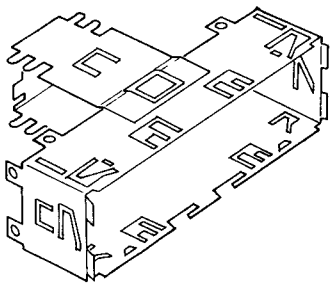
Weight: 1.15kg

Printed in Japan 298-2951-00

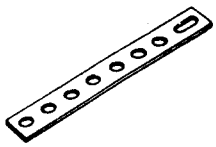
■COMPONENTS VIEW:

- **M621(PE-6006A-A)**
- **M622(PE-6007A-A)**

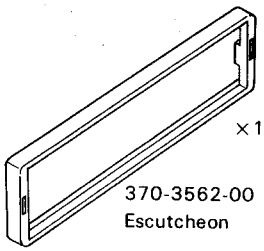
Main unit		1
Mounting bracket	300-6692-00	1



Mounting bracket	300-4976-00	1



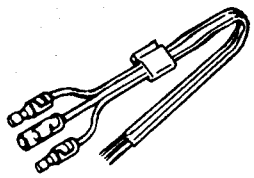
Parts bag	922-1247-00	



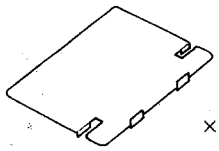
×1

370-3562-00
Escutcheon

Extension lead	852-4649-00	1

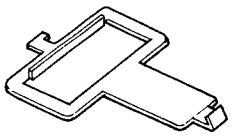


Parts bag	921-7554-00	1



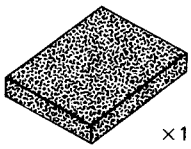
×1

330-7672-00
Lock plate



×2

330-7673-00
Hook plate



×1

345-2934-00
Cushion

×1

345-3653-01
Spacer

×1

820-0050-04
Vinyl tube

×1

725-0181-00
Plate nut

×1

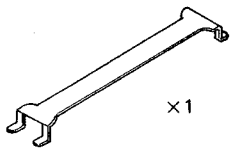
700-5016-10
Tap screw

×1

740-5000-10
Flat washer

×1

722-0314-00
Nut



×1

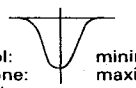
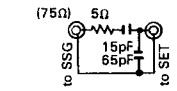
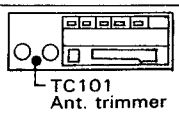
330-7759-00
Hold plate

■FEATURES:

- MW/LW/UKW(FM)-MPX radio with 1-way stereo cassette player (FF lock).
- Provided radio traffic information (VF) system(M621)
- Super SASC (Signal Actuated Stereo Control) circuit system.
- Loudness circuit built-in.
- FEC mechanism.

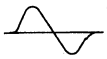
■ADJUSTMENTS:

MW, LW CIRCUIT

Item	Input	Output	Frequency	Method of adjustment		Instruments required	Remarks
IF	TP51	TP52	460kHz	IFT2 and IFT3	Adjust the cores of IFT maximum wave-form height with good symmetry.	● Sweep generator ● Oscilloscope	IF curve  Vol: minimum Tone: maximum Balance: center Dial pointer: left end
Tracking (MW)	Antenna receptacle	Meter across the speaker voice coil	510kHz	L4	Adjust the coil for maximum indication of V.T.V.M.	● S.S.G. ● Dummy load (4Ω) ● Dummy ANT ● V.T.V.M.	 Use dummy antenna between S.S.G. and antenna receptacle.
Tracking (LW)			145kHz 320kHz	L5 CT-2	Adjust the coil & trimmer for maximum indication of V.T.V.M.	● S.S.G. ● V.T.V.M. ● Dummy load (4Ω) ● Dummy ANT	
Antenna trimmer	Receive white noise	Speaker	1,400kHz	TC101	Adjust the trimmer so that the noise output becomes maximum.	● Speaker	 TC101 Ant. trimmer

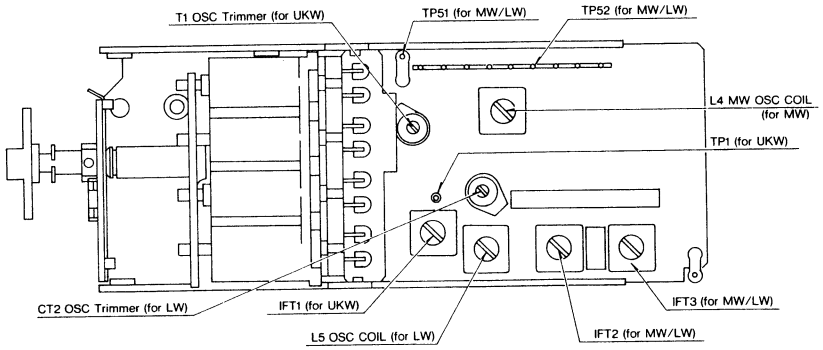
● SPECIFICATION —LIMIT— Quieting sensitivity : MW Less than 33dB (at 20dB S/N)
LW Less than 43dB (at 20dB S/N)

UKW(FM) CIRCUIT

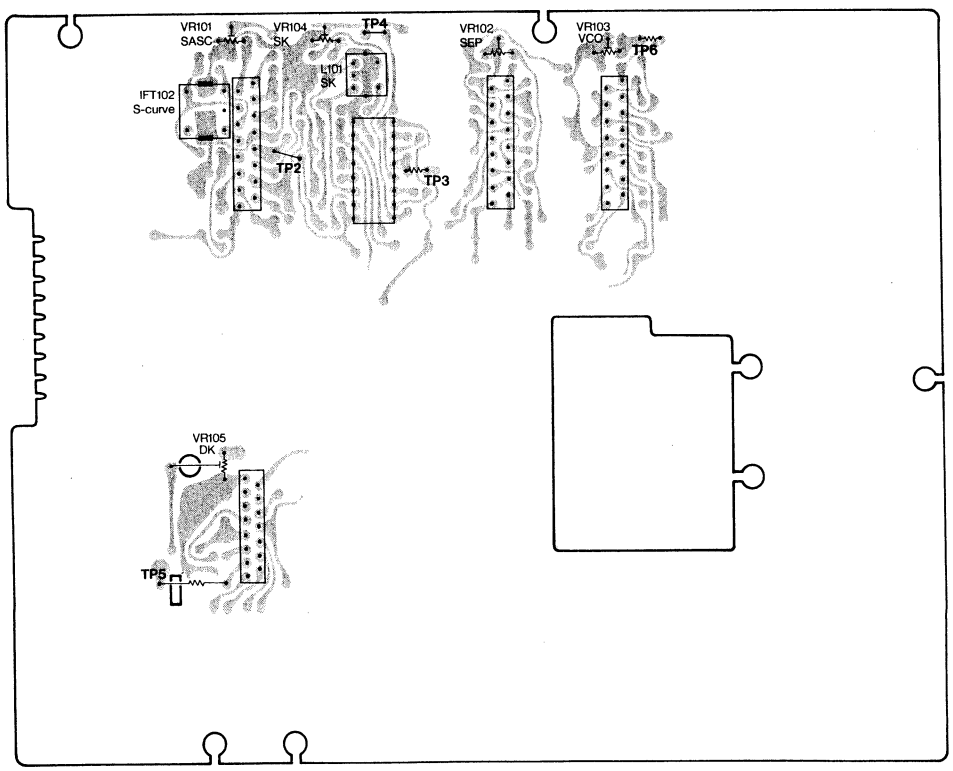
Item	Input	Output	Frequency	Method of adjustment		Instruments required	Remarks
S-curve	TP1 (Tuner pack)	TP2	10.7MHz	IFT1and IFT102	Adjust the cores for wave-form having good symmetry and good linearity.	● Sweep generator ● Oscilloscope	 ● Ground pin 6 of IC101 (LA1140)
Tracking	Antenna receptacle	Meter across the speaker voice coil	87.5MHz	T-1 (OSC trimmer)	Adjust the trimmer for maximum indication of V.T.V.M.	● Dummy load (4Ω) ● V.T.V.M. ● S.S.G.	
<MPX> (VCO)		TP6	98MHz 55dB No modulation	Connect a frequency counter to TP.6 via a 100kΩ resistor and adjust VR103 to 76kHz.		● S.S.G. ● Frequency counter	"ST" ON
Separation		Meter across the speaker voice coil	Right or left signal (400Hz)	VR102	Adjust the VR for maximum separation.	● Stereo SG (98MHz, 65dB) ● S.S.G.	"ST" ON
SASC circuit	Set to the specified modulation (30%), assuming an UKW SSG output 55dB, modulation frequency 7kHz. Set the output level to 0dBm (=0.775V) using the volume control. Set the UKW SSG output to 38dB and adjust VR101 so that the output level is 3dB down. "ST" ON						
SK(M621)	1. Connect a Millivoltmeter to TP4 and adjust L101 to peak voltage. (98MHz, 55dB) 2. Connect a frequency counter to TP3, and adjust VR104 to 57kHz. (98MHz, 0dB)						
DK(M621)	Connect a frequency counter to TP5, and adjust VR105 to 125Hz.						

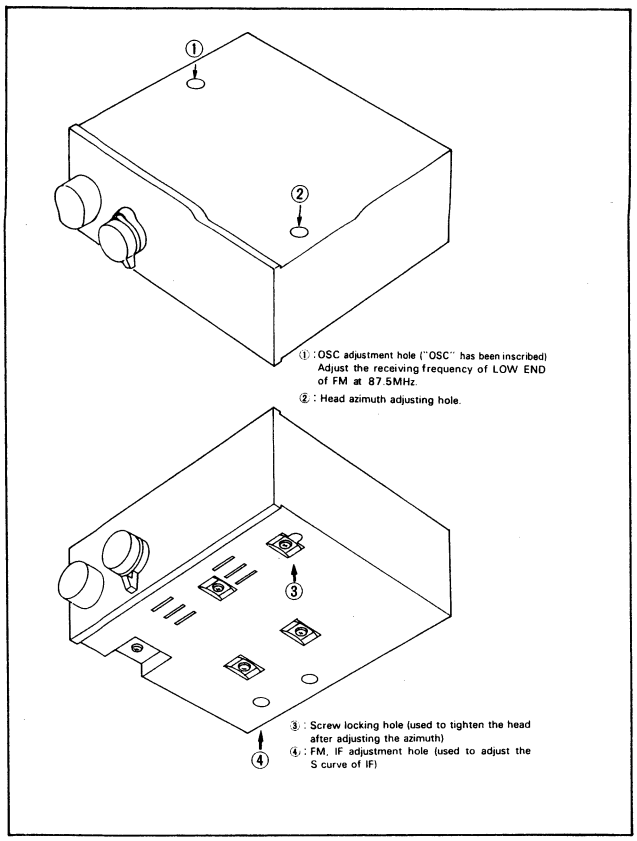
[NOTE] After the adjustment of frequency range, be sure that;
(1) Band edge frequency of LW shall be 148.5kHz −20kHz
(2) Band edge frequency of UKW shall be 87.5MHz +100kHz −160kHz at low end. And shall be lower than 108.16MHz at upper end.

● SPECIFICATION —LIMIT— Quieting sensitivity : Less than 12dB (at 30dB S/N)
Stereo separation : More than 20dB



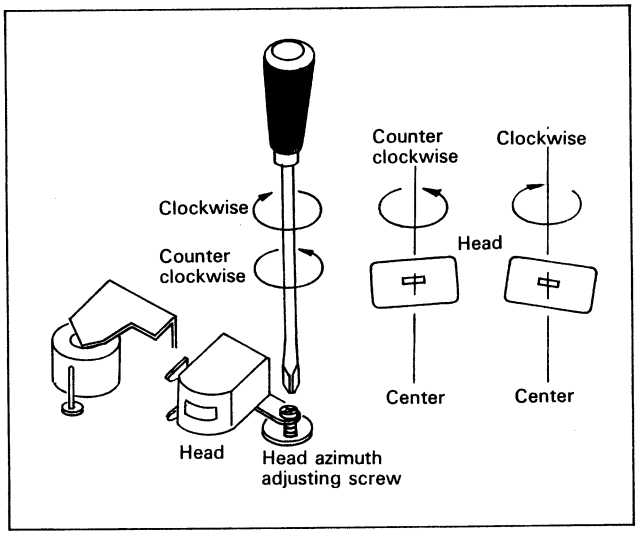
● ADJUSTMENT POINT




①
②
①: OSC adjustment hole ("OSC" has been inscribed) Adjust the receiving frequency of LOW END of FM at 87.5MHz.
②: Head azimuth adjusting hole.
③
④
③: Screw locking hole (used to tighten the head after adjusting the azimuth)
④: FM, IF adjustment hole (used to adjust the S curve of IF)

■HEAD AZIMUTH ADJUSTMENT:

Play the test tape 6.3kHz, −10VU and adjust by turning the head azimuth adjusting screw so that the output level becomes close to maximum.



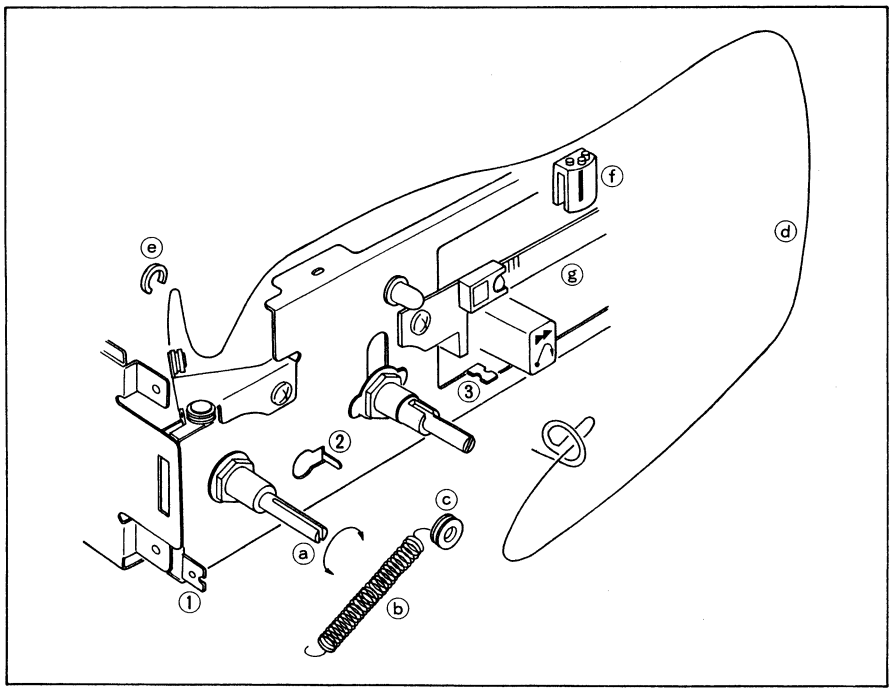
● SPECIFICATION −LIMIT−

Wow and flutter : Less than 0.25%(W.R.M.S)

■DIAL CORD STRINGING:

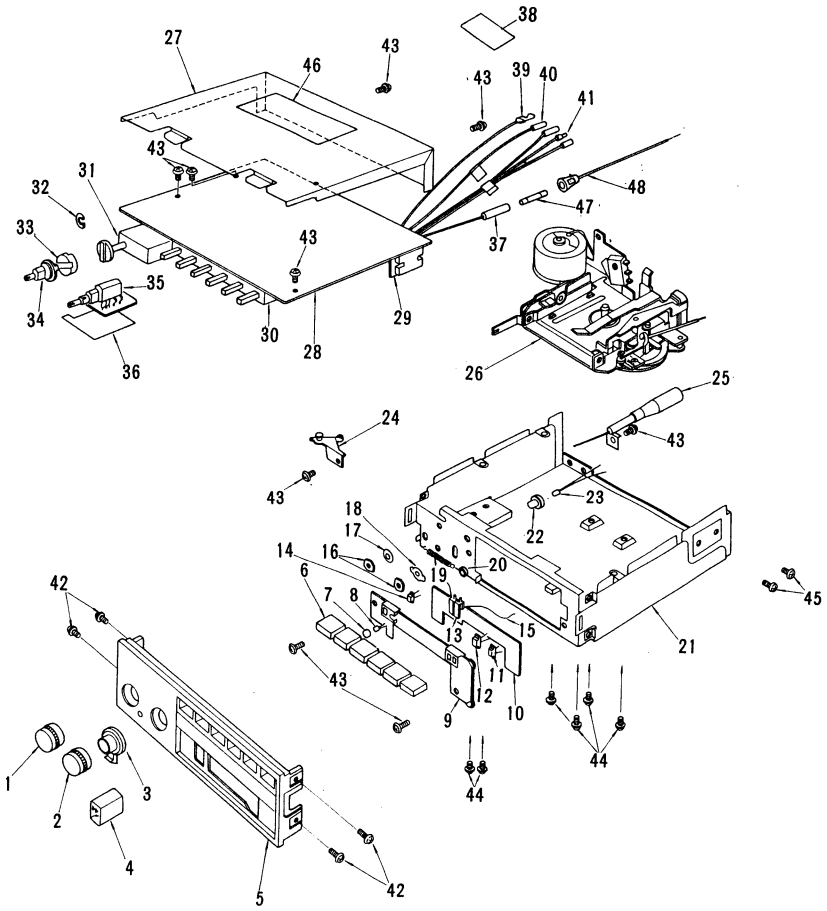
Threading Procedure

1. Turn the tuning shaft ⓐ clockwise to its full position.
2. Mount the pulley ⓒ at one end of the spring ⓑ, insert another end in the hook ① of the lower case, and insert the hole of the pulley ⓒ in the hook ②.
3. Connect one end of the dial cord ⓓ to the hook ③, hang the string sequentially, and fix the string to the tuner shaft by the use of the c-ring ⓔ. At the time, make sure that the string is not loosened
4. Dismount the pulley ⓒ from the hook ②.
5. Mount the dial pointer ⓕ on the back plate ⓖ and hung the dial cord ⓓ.
6. Turn the tuning shaft ⓐ counterclockwise to its full position and set the left end of the dial pointer ⓕ to the marking inscribed on the back plate.



■EXPLODED VIEW • PARTS LIST:

◎Main section M621

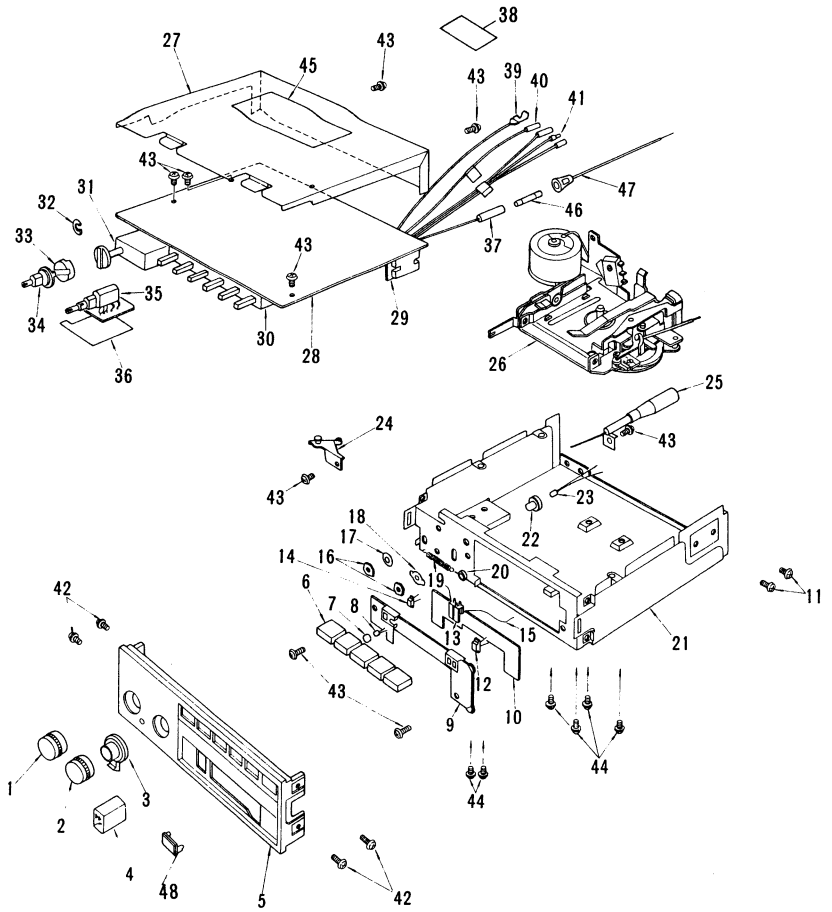


REF.NO.	PART NO. (ORDER NO.)	DESCRIPTION	Q'TY
1	380-4296-00	Knob (TUNING)	1
2	380-4297-00	Knob (VOL)	1
3	380-4298-00	Knob (TONE)	1
4	98637-001-0	Button (EJECT)	1
5	98870-001-0	Escutcheon ass'y	1
6	382-0515-00	Button	6
7	345-2830-23	P.L. cap	1
8	017-0349-04	Pilot lamp	1
9	98633-001-0	Back plate	1
10	98509-001-0	P.W.B	1
11	001-0312-02	LED (Yellow)	1
12	001-0312-01	LED (Red)	1
13	376-0888-00	Dial pointer	1
14	001-0312-03	LED (Orange)	1
15	830-0600-83	Dial cord	1
16	722-0231-00	Hexagon nut (M9x0.75)	2
17	745-0430-01	Flat washer (M9)	1
18	330-7677-00	Lock plate	1
19	750-2175-00	Spring	1
20	335-0894-00	Pully	1
21	98652-001-0	Lower case	1
22	345-3621-00	P.L. cap	1
23	017-0340-00	Pilot lamp	1
24	330-7676-00	Cord holder	1

REF.NO.	PART NO. (ORDER NO.)	DESCRIPTION	Q'TY
25	092-0522-00	Antenna receptacle	1
26	930-0484-03	Tape mechanism	1
27	98651-001-0	Upper case	1
28	98509-002-1	P.W.B	1
29	944-0653-00	Filter ass'y	1
30	013-3691-00	Switch (6-key)	1
31	941-0120-00	Tuner pack	1
32	746-0668-01	Lock washer	1
33	335-1536-00	Oldham jointer	1
34	961-0116-00	Tuning shaft ass'y	1
35	012-4074-00	Variable resistor	1
36	347-1214-00	Insulator	1
37	850-1822-00	A-lead	1
38	98620-001-0	Set plate	1
39	840-0386-00	Bonding wire	1
40	852-6652-01	Extension lead	1
41	851-2057-05	Speaker lead	1
42	731-3006-89	Tap tight (M3x6)	4
43	731-3006-80	Tap tight (M3x6)	9
44	714-3003-81	Machine screw (M3x3)	6
45	714-3010-81	Machine screw (M3x10)	2
46	285-0915-00	Guide label	1
47	120-0030-00	Fuse (3A)	1
48	850-1844-01	A-lead	1

■EXPLODED VIEW • PARTS LIST:

◎Main section M622

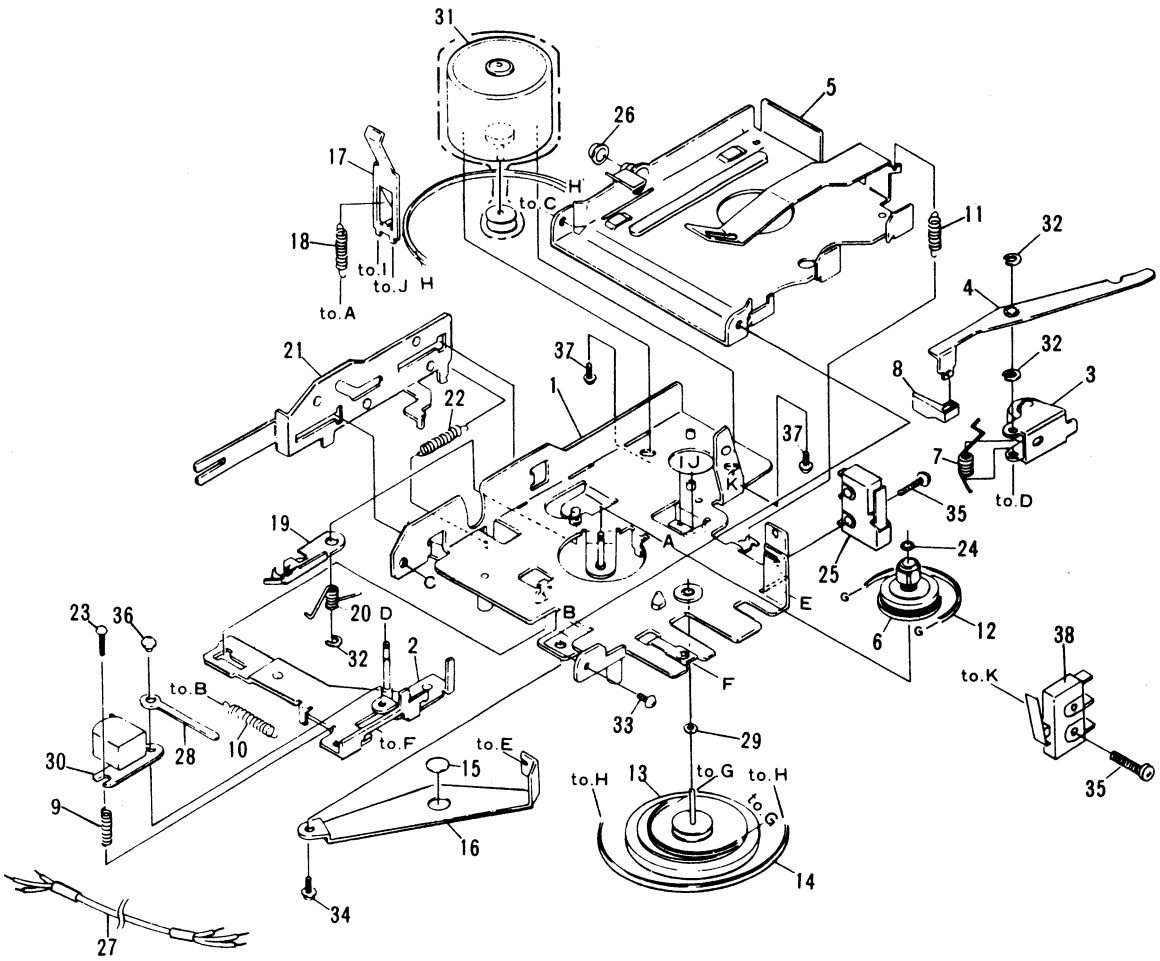


REF.NO.	PART NO. (ORDER NO.)	DESCRIPTION	Q'TY
1	380-4296-00	Knob (TUNING)	1
2	380-4297-00	Knob (VOL)	1
3	380-4298-00	Knob (TONE)	1
4	98637-001-0	Button (EJECT)	1
5	98870-002-0	Escutcheon ass'y	1
6	382-0515-00	Button	6
7	345-2830-23	P.L. cap	1
8	017-0349-04	Pilot lamp	1
9	98633-001-0	Back plate	1
10	98509-001-0	P.W.B	1
11	714-3010-81	Machine screw (M3x10)	2
12	001-0312-01	LED (Red)	1
13	376-0888-00	Dial pointer	1
14	001-0312-03	LED (Orange)	1
15	830-0600-83	Dial cord	1
16	722-0231-00	Hexagon nut (M9x0.75)	2
17	745-0430-01	Flat washer (M9)	1
18	330-7677-00	Lock plate	1
19	750-2175-00	Spring	1
20	335-0894-00	Pully	1
21	98652-001-0	Lower case	1
22	345-3621-00	P.L. cap	1
23	017-0340-00	Pilot lamp	1
24	330-7676-00	Cord holder	1

REF.NO.	PART NO. (ORDER NO.)	DESCRIPTION	Q'TY
25	092-0522-00	Antenna receptacle	1
26	930-0484-03	Tape mechanism	1
27	98651-001-0	Upper case	1
28	98509-002-1	P.W.B	1
29	944-0653-00	Filter ass'y	1
30	013-3690-00	Switch (6-key)	1
31	941-0120-00	Tuner pack	1
32	746-0668-01	Lock washer	1
33	335-1536-00	Oldham jointer	1
34	961-0116-00	Tuning shaft ass'y	1
35	012-4074-00	Variable resistor	1
36	347-1214-00	Insulator	1
37	850-1822-00	A-lead	1
38	98620-002-0	Set plate	1
39	840-0386-01	Bonding wire	1
40	852-6652-00	Extension lead	1
41	851-2057-05	Speaker lead	1
42	731-3006-89	Tap tight (M3x6)	4
43	731-3006-80	Tap tight (M3x6)	9
44	714-3003-81	Machine screw (M3x3)	6
45	285-0915-00	Guide label	1
46	120-0030-00	Fuse (3A)	1
47	850-1844-01	A-lead	1
48	98663-001-0	Dummy button	1

■EXPLODED VIEW • PARTS LIST:

◎Tape mechanism section

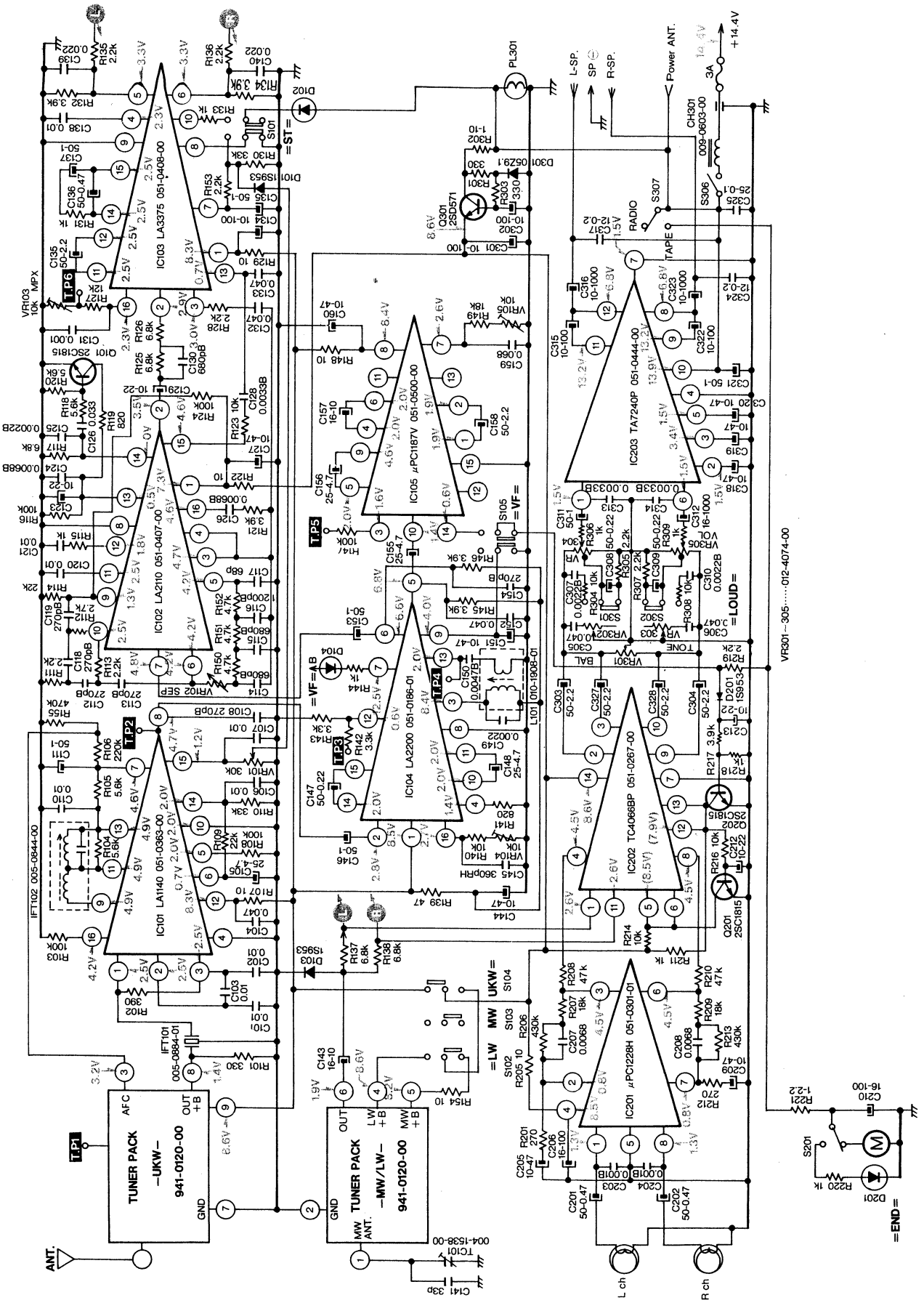


REF.NO.	PART NO. (ORDER NO.)	DESCRIPTION	Q'TY
1	960-3302-00	Deck plate ass'y	1
2	960-3225-01	Head plate ass'y	1
3	960-3229-00	Roller ass'y	1
4	960-3227-01	S-lever ass'y	1
5	960-3226-02	Pack guide ass'y	1
6	960-3228-00	Reel base ass'y	1
7	750-1986-00	Spring	1
8	631-0332-00	Sensor	1
9	750-1987-00	Spring	1
10	750-1988-01	Spring	1
11	750-1989-01	Spring	1
12	602-0053-00	Belt	1
13	611-0059-00	Flywheel	1
14	602-0063-00	Belt	1
15	631-0222-00	Thrust plate	1
16	630-1261-00	Flywheel plate	1
17	630-1260-01	Eject plate	1
18	750-2097-00	Spring	1
19	630-1360-00	Lock cam	1

REF.NO.	PART NO. (ORDER NO.)	DESCRIPTION	Q'TY
20	750-2098-01	Spring	1
21	630-1358-00	Eject lever	1
22	750-2099-01	Spring	1
23	716-0384-00	Screw (M2x8)	1
24	746-0628-01	Flat washer	1
25	013-3505-00	Switch	1
26	632-0999-00	Guide roller	1
27	815-1896-00	Head lead	1
28	330-4896-00	Lead clamp	1
29	746-0624-00	Flat washer	1
30	011-0265-01	Head	1
31	960-3292-00	D.C motor ass'y	1
32	743-2000-10	E-ring (M2)	3
33	714-3003-11	Machine screw (M3x3)	1
34	731-2605-81	Tap tight (M2.6x5)	1
35	716-0438-00	Machine screw (M2.3x8.5)	2
36	714-2003-81	Machine screw (M2x3)	1
37	732-2604-11	Sems screw (M2.6x4)	2
38	013-2690-02	Switch	1

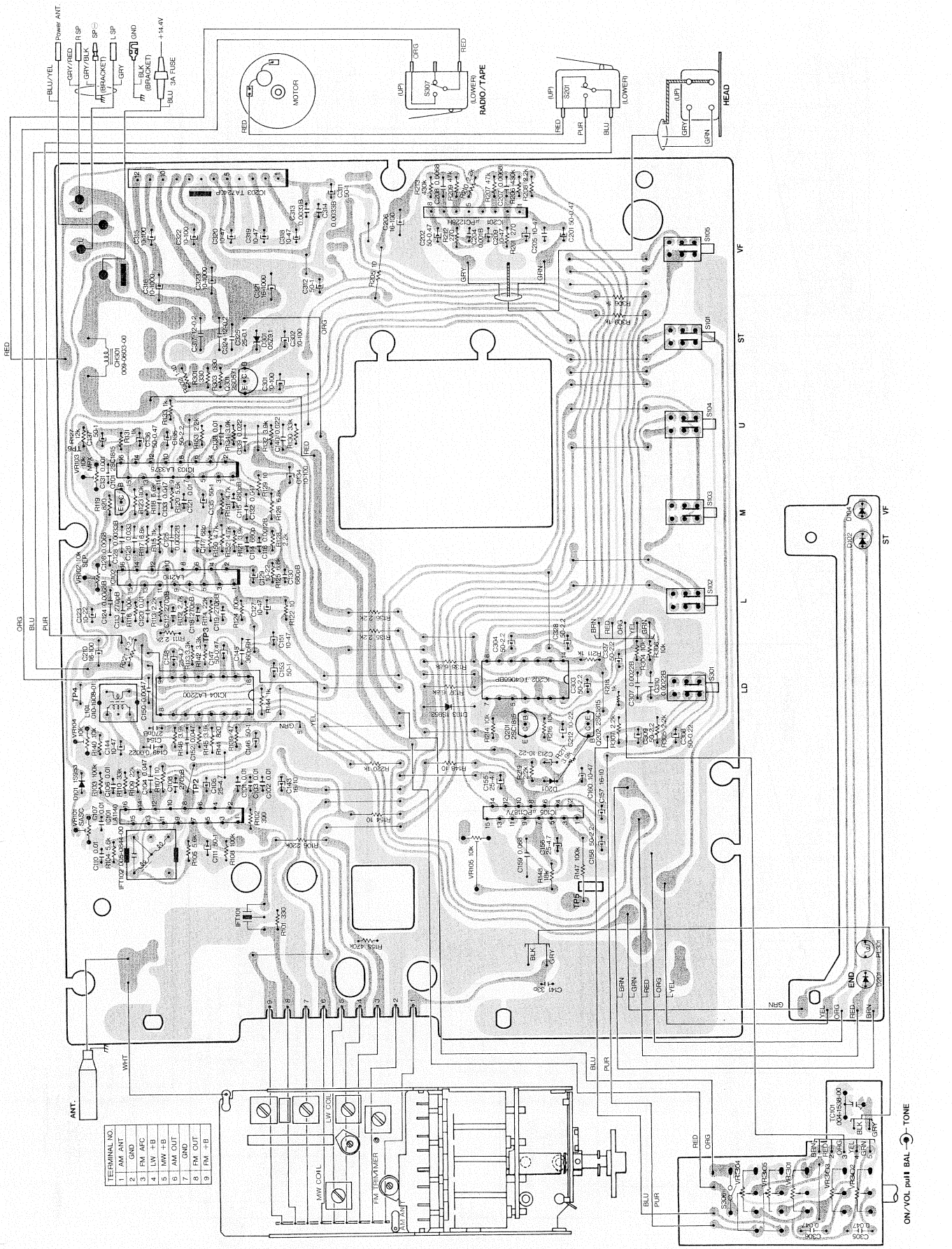
■CIRCUIT DIAGRAM:

◎M621



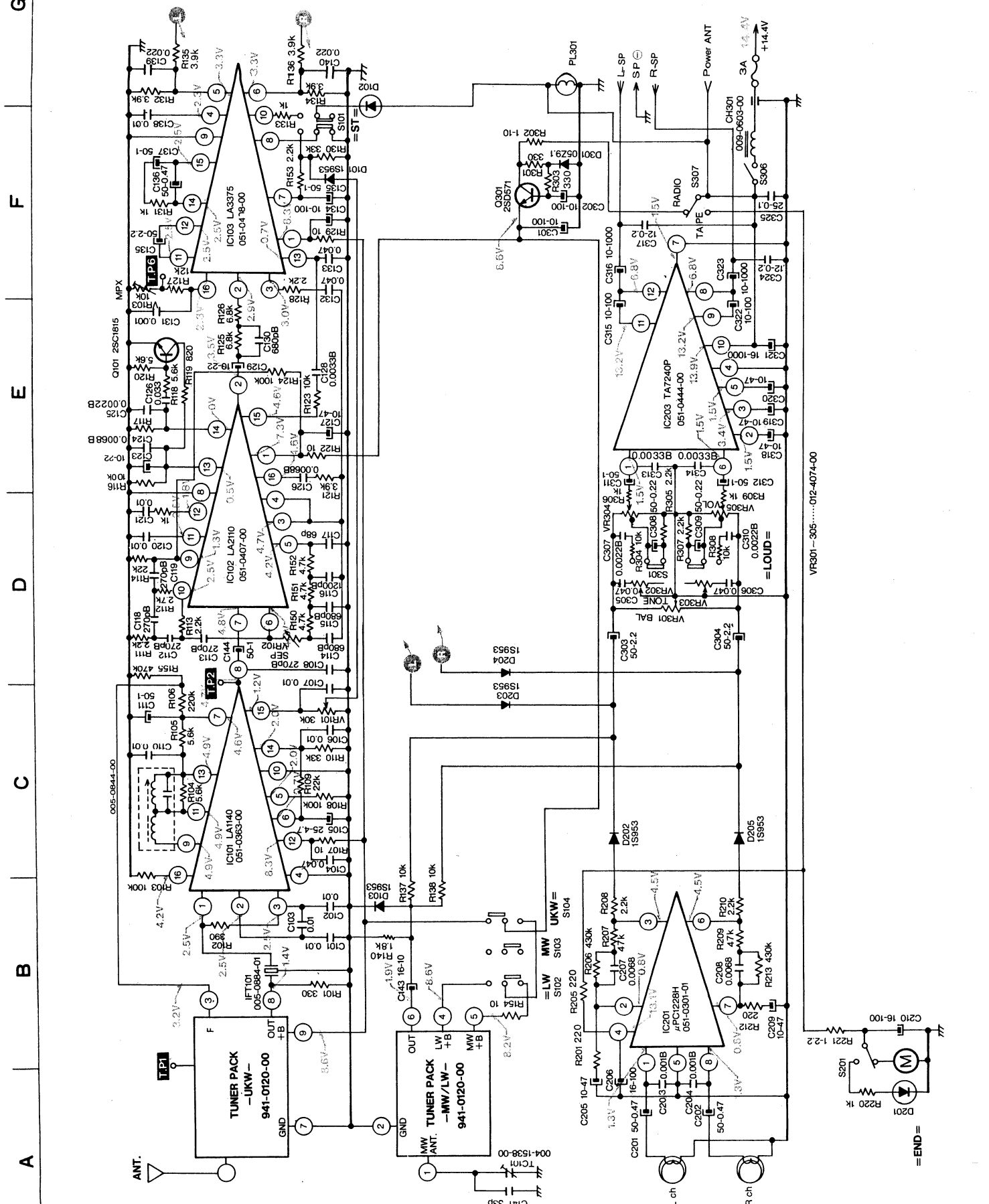
■PRINTED WIRING BOARD:

◎M621



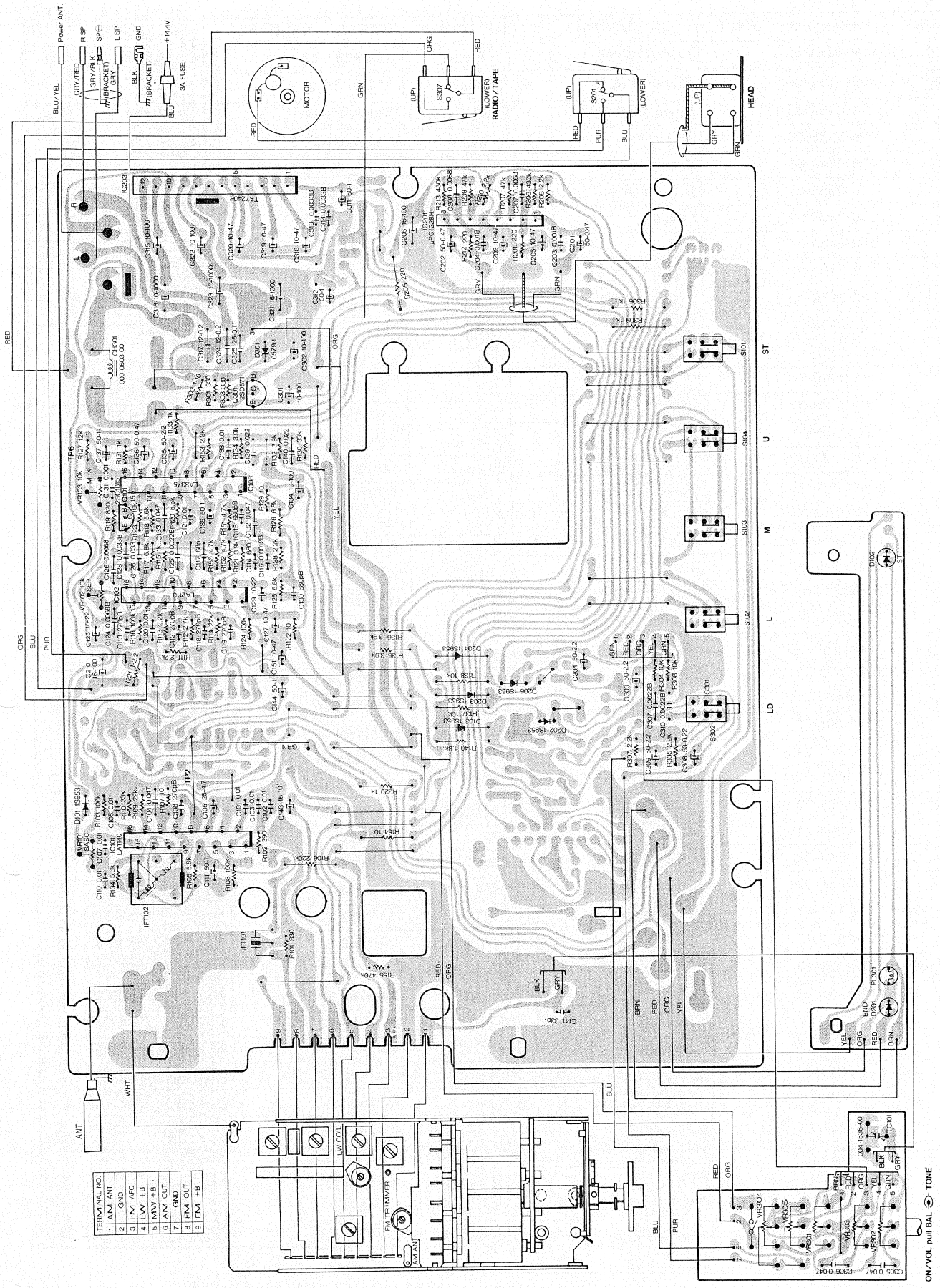
■CIRCUIT DIAGRAM:

◎M622



■PRINTED WIRING BOARD:

◎M622



■PARTS LIST:

◎Electrical section

REF.NO.	PART NO. (ORDER NO.)	DESCRIPTION	Q'TY
$D^{101,103}_{201}$ ※1	001-0151-00	Diode (1S953)	3
$D^{101,103}_{202,203,204,205}$ ※2	001-0151-00	Diode (1S953)	6
D_{301}	001-0169-05	Diode (05Z9.1)	1
TC_{101}	004-1538-00	Trimmer	1
IFT_{102}	005-0844-00	IF-transformer	1
IFT_{101}	005-0884-01	IF-transformer	1
CH_{301}	009-0603-00	Choke	1
L_{101}	010-1908-01	Coil	1
VR_{105}	012-2740-00	Variable resistor (10kΩ)	1
$VR_{102,103,104}$	012-3170-02	Variable resistor (10kΩ)	3
VR_{101}	012-3170-04	Variable resistor (30kΩ)	1
R_{142}	032-0059-47	Film resistor (¼Ws3.3kΩ)	1
R_{127}	032-0059-51	Film resistor (¼Ws12kΩ)	1
$C_{317,324}$	043-0020-01	Ceramic capacitor (12V0.2μF)	2
IC_{104}	051-0186-01	IC (LA2200)	1
IC_{202}	051-0267-00	IC (TC4066BP)	1
IC_{201}	051-0301-01	IC (μPC1228H)	1
IC_{101}	051-0363-00	IC (LA1140)	1
IC_{102}	051-0407-00	IC (LA2110)	1
IC_{103}	051-0408-00	IC (LA3375)	1
IC_{203}	051-0444-02	IC (TA7240AP)	1
IC_{105}	051-0500-00	IC (μPC1187V)	1
$Q_{101,201,202}$	102-1815-25	Transistor (2SC1815Y)	3
Q_{301}	103-0571-12	Transistor (2SD571L)	1
$R_{107,129,148}$	111-1001-21	Film resistor (¼Ws10Ω)	3
$R_{122,154,205}$	111-1001-22	Film resistor (¼Ws10Ω)	3
$R_{220,306,309}$	111-1021-21	Film resistor (¼Ws1kΩ)	3
$R^{115,131,133,144}_{211,218}$	111-1021-22	Film resistor (¼Ws1kΩ)	6
$R^{123,140,214,216}_{304,308}$	111-1031-22	Film resistor (¼Ws10kΩ)	6
R_{147}	111-1041-21	Film resistor (¼Ws100kΩ)	1
$R_{103,108,116,124}$	111-1041-22	Film resistor (¼Ws100kΩ)	4
R_{149}	111-1831-22	Film resistor (¼Ws18kΩ)	1
$R_{135,136}$ ※8	111-2221-21	Film resistor (¼Ws2.2kΩ)	2
$R_{135,136}$ ※9	111-3921-22	Film resistor (¼Ws3.9kΩ)	2
$R^{111,113,128,153}_{208,210,219,305,309}$	111-2221-22	Film resistor (¼Ws2.2kΩ)	9
$R_{109,114}$	111-2231-22	Film resistor (¼Ws22kΩ)	2
R_{106}	111-2241-21	Film resistor (¼Ws220kΩ)	1
$R_{201,212}$ ※3	111-2711-22	Film resistor (¼Ws270Ω)	2
$R_{205,212}$ ※4	111-2211-21	Film resistor (¼Ws220Ω)	2
R_{201} ※5	111-2211-22	Film resistor (¼Ws220Ω)	1
R_{112}	111-2721-22	Film resistor (¼Ws2.7kΩ)	1
$R_{101,301,303}$	111-3311-22	Film resistor (¼Ws330Ω)	3
R_{143}	111-3321-22	Film resistor (¼Ws3.3kΩ)	1
$R_{110,130}$	111-3331-22	Film resistor (¼Ws33kΩ)	2
R_{102}	111-3911-22	Film resistor (¼Ws390Ω)	1
$R^{121,132,134,145}_{146,217}$	111-3921-22	Film resistor (¼Ws3.9kΩ)	6

REF.NO.	PART NO. (ORDER NO.)	DESCRIPTION	Q'TY
$R_{206,213}$	111-4341-22	Film resistor (¼Ws430kΩ)	2
R_{139}	111-4701-22	Film resistor (¼Ws47Ω)	1
$R_{150,151,152}$	111-4721-22	Film resistor (¼Ws4.7kΩ)	3
$R_{207,209}$	111-4731-22	Film resistor (¼Ws47kΩ)	2
R_{155}	111-4741-22	Film resistor (¼Ws470kΩ)	1
$R_{104,105,118,120}$	111-5621-22	Film resistor (¼Ws5.6kΩ)	4
$R_{137,138}$	111-6821-21	Film resistor (¼Ws6.8kΩ)	2
$R^{117,125}_{126}$ ※6	111-6821-22	Film resistor (¼Ws6.8kΩ)	3
$R_{137,138}$ ※7	111-1031-22	Film resistor (¼Ws10kΩ)	2
$R_{119,141}$	111-8211-22	Film resistor (¼Ws820Ω)	2
R_{302}	114-1001-52	Film resistor (1W10Ω)	1
R_{221}	114-2291-52	Film resistor (1W2.2Ω)	1
C_{131}	141-1022-10	Polyester capacitor (50V0.001μF)	1
C_{149}	141-2222-10	Polyester capacitor (50V0.0022μF)	1
$C_{207,208}$	141-6822-10	Polyester capacitor (50V0.0068μF)	2
C_{159}	141-6832-10	Polyester capacitor (50V0.068μF)	1
$C_{203,204}$	160-1022-05	Ceramic capacitor (1000pFB)	2
C_{116}	160-1222-05	Ceramic capacitor (1200pFB)	1
$C_{125,307,310}$	160-2222-05	Ceramic capacitor (2200pFB)	3
$C^{108,112,113,118}_{119,154}$	160-2712-05	Ceramic capacitor (270pFB)	6
$C_{128,313,314}$	160-3322-05	Ceramic capacitor (3300pFB)	3
C_{150}	160-4722-05	Ceramic capacitor (4700pFB)	1
$C_{114,115,130}$	160-6812-05	Ceramic capacitor (680pFB)	3
$C_{124,126}$	160-6822-05	Ceramic capacitor (6800pFB)	2
$C^{101,102,103,106}_{107,110,120,121,138}$	171-1033-06	Ceramic capacitor (25V0.01μF)	9
C_{325}	171-1043-06	Ceramic capacitor (25V0.1μF)	1
$C_{139,140}$	171-2233-06	Ceramic capacitor (25V0.022μF)	2
C_{126}	171-3333-06	Ceramic capacitor (25V0.033μF)	1
$C^{104,132,133,152}_{305,306}$	171-4733-06	Ceramic capacitor (25V0.047μF)	6
C_{141}	174-3300-13	Ceramic capacitor (33pFCH)	1
C_{145}	174-3610-37	Ceramic capacitor (360pFRH)	1
C_{117}	174-6800-46	Ceramic capacitor (68pFSL)	1
$C^{111,135,137,146}_{153,311,312}$	179-1053-62	Electrolytic capacitor (50V1μF)	7
$C_{316,323}$	179-1083-23	Electrolytic capacitor (10V1000μF)	2
$C_{136,201,202}$	179-4743-62	Electrolytic capacitor (50V0.47μF)	3
$C_{205,209}$	179-4763-22	Electrolytic capacitor (10V47μF)	2
$C_{143,157}$	180-1064-32	Electrolytic capacitor (16V10μF)	2
$C^{134,301,302,315}_{322}$	180-1074-22	Electrolytic capacitor (10V100μF)	5
$C_{206,210}$	180-1074-32	Electrolytic capacitor (16V100μF)	2
C_{321}	180-1084-32	Electrolytic capacitor (16V1000μF)	1
$C^{135,158,303,304}_{327,328}$	180-2254-62	Electrolytic capacitor (50V2.2μF)	6
$C_{123,129,212,213}$	180-2264-22	Electrolytic capacitor (10V22μF)	4
$C_{105,148,155,156}$	180-4754-42	Electrolytic capacitor (25V4.7μF)	4
$C^{127,144,151,160}_{318,319,320}$	180-4764-22	Electrolytic capacitor (10V47μF)	7
$C_{147,308,309}$	181-2243-62	Electrolytic capacitor (50V0.22μF)	3

Note : ※1、※3、※6、※8 ·····Use M621
※2、※4、※5、※7、※9 ·····Use M622

■TUNER PACK: (INNER CIRCUIT)